MICROFICHE LABEL -- SPECIAL TITLE

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Please use the following title for the label on this fiche:

UNION CARBIDE — CUMENE

Microfiche # OTS 0206745

Document ID #

1A

OFFICE OF TOXIC SUBSTANCES REV. 7/27/82

CODING FORM FOR GLOBAL INDEXING

Microfiche No. (7) • OTS 0206745	1	No. of Pages	2
Doc I.D. 878214980	3	Old Doc I.D. 8DS	4
Case No.(s) OTS 8400 3 A II			5
Date Produced (6) 050449	6	Date Rec'd (6) 022285	7
Conf. Code • N	8		

Check One: ☐ Publication ☐ Internally Generated ☑ Externally Generated

Pub/Journal Name	9
	9
Author(s)	10
Organ. Name UNION CARBIDE CORP	11
Dept/Div	12
P.O. Box — 13 Street No./Name 39 OLD RIDGEBURY RD	14
City DANBURY 15 State CT 16 Zip 06817 17 Country — 18	
MID No. (7) — 19 D & B NO. (11) —	20
Contractor —	21
Doc Type • RI • UP • HEASD SD, SU HS FN	22
Doc Title RANGE FINDING TESTS ON CUMENE (ISOPROPYLBENZENE) WITH COVER LETTER	23

Chemical Name (300 per name)	25	CAS No. (10)	24
CUMENE		98-82-8	

VB
3/6/85 U.S.

UNION CARBIDE CORPORATION 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

JACKSON B. BROWNING
VICE-PRESIDENT
HEALTH, SAFETY & ENVIRONMENTAL AFFAIRS

CERTIFIED MAIL
RETURN RECEIPT
REQUESTED

February 25, 1985

U. S. Environmental Protection Agency
TSCA 8D
P.O. Box 2060
Rockville, Maryland 20852

Subject: Union Carbide TSCA Sec. 8(d)
40 CFR 716.6 and 716.7

Sirs:

With respect to:

Chapter I of Title 40 of the Code of Federal Regulations;
Subpart A, Sec. 716.6 and 716.7;
As amended 716.17 (a) (10), November 28, 1984; Federal Register Vol.49; p. 46742, November 28, 1984.
Sec. 8(d), Pub. L. 94-469, Stat. 2029 (15 U.S.C. 2607 (d));
OPTS 84013; FRL 2725-1.

Union Carbide Corporation herewith submits the attached copies of studies and list of studies in compliance with the above-identified regulation and amendment.

There is no information in the enclosed copies of studies or list of studies for which Union Carbide asserts claims of confidentiality. The printed words "Business Confidential" or "Confidential" at the top of pages for some reports were for the internal guidance of Union Carbide personnel at the time of report issuance and does not represent a claim by Union Carbide Corporation for confidential handling of the information submitted pursuant to TSCA Sec. 8(d) rules.

Where some lines are deleted from certain reports, or where information from reports (particularly earlier ones) has been compiled for purposes of this report, it is solely due to the fact that the deleted information pertains to chemicals or substances other than those for which reporting is required under the above-identified rule, as amended. Union Carbide Corporation believes that the enclosed copies of studies and list of studies

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Confidential

Report 12-39

Rec'd 5-4-49
LKH-5-4-49

MELLON INSTITUTE OF INDUSTRIAL RESEARCH

UNIVERSITY OF PITTSBURGH

SPECIAL REPORT

on

Range Finding Tests on Cumene (Isopropylbenzene)

Tables of Protocols Attached

Carbide and Carbon Chemicals Corporation Industrial Fellowship 274-12

Summary

The advanced LD_{50} for cumene is 2.91 (2.55 to 3.32) gm./kg. for rats by the oral route. This relegates the compound to the same oral toxicity grade as "Cellosolve".

Cumene penetrates rabbit skin poorly as is indicated by the R. F. LD_{50} of 12.3 (7.7 to 19.7) ml./kg.

Inhalation of saturated vapors evolved at room temperature for several hours, or mists generated at high temperature, for shorter time periods, would constitute moderate hazards to life. A four hour exposure to 8000 ppm. was lethal to rats but 4000 ppm. was not. Rats were narcotized in the exposure at both concentrations.

Cumene is no more irritating to rabbit skin than is 2-ethyl hexyl acetate and it produces no damage to the rabbit eye when applied undiluted.

Sample

A quantity of cumene (isopropylbenzene) was procured from Eimer and Amend on 1-10-49 bearing their identification No. C-549. Toxicity investigations were made for the HN-project.

Single Oral Doses

Cumene has an LD_{50} of 2.91 (2.55 to 3.32) gm./kg. when fed as a 20% dispersion in 1% "Tergitol" 7 to male albino Sherman strain rats, 90 to 120 grams in weight, without previous withdrawal of food. Sluggishness prostration and narcosis were noted during a 24 hour period following the doses which were administered by stomach tube. Lung hemorrhage, and congestion of the visceral organs were seen on autopsy of victims. Oral toxicity on homologues are not available among the data on file in this laboratory. For comparative purposes, however, cumene is in the same oral toxicity grade as "Cellosolve".

represent all of the studies which Union Carbide's file search has identified to date as reportable under the above-identified rule and amendment. Should any reportable studies be discovered subsequently, they will be forwarded immediately.

The Environmental Protection Agency and other appropriate governmental bodies are free to use the enclosed information as necessary in the discharge of their mandated responsibilities. However, identified authors, whether employees of Union Carbide or elsewhere, or their organizations, are the rightful owners of the publication rights to the contained information.

If you have questions concerning the enclosed reports and list of studies, or wish to request further basic underlying data pertinent to the studies, please contact me or Dr. Donald L. Heywood (203) 794-5224 of this Department.

Very truly yours,

Jackson B. Browning, Vice-President
Health, Safety and Environmental
Affairs (203) 794-5227

JBB/cr
Attachments

1D

Skin Penetration

The R. F. LD_{50} for rabbits by skin penetration is 12.3 (7.7 to 19.7) ml./kg. for the undiluted compound retained in contact with the clipped skin of the trunk for 24 hours in a 14 day observation period. Moderate to marked erythema of the skin was noted upon removal of the impervious covering. The principal damage noted at autopsy was to the kidney.

Inhalation

Groups of 6 rats were used in all of the vapor exposure tests and observed for 14 days thereafter.

Substantially saturated vapor evolved at room temperature by aeration of cumene killed all of the rats exposed for 8 hours, 1/3 of the group in 4 hours and 1/6 in the 2 hour exposure.

A mist produced by aeration of the compound heated in a bath at 170° C. was lethal to all of the rats exposed for 4 hours, to 1/2 in 2 hours and to none in 1 hour. Saturated vapor and mist, both constitute a moderate hazard to life in relatively short single exposures.

A concentration of 8000 ppm. killed 2/3 of the rats exposed for 4 hours but 4000 ppm. for a similar period caused no deaths, although all of the rats were narcosed upon removal from the exposure. Fair weight gains were made by all of these rats during the observation period.

Irritation

In the rabbit belly vesicant test, undiluted cumene caused no reaction more severe than moderate erythema.a reaction comparable to that produced by 2-ethyl hexyl acetate.

The undiluted compound was harmless to rabbit eyes when applied in 0.5 ml. amounts.

Charles P. Carpenter

SENIOR INDUSTRIAL FELLOW

Charles P. Carpenter

Typed: May 4, 1949

Table 12-75

CUMENE (ISOPROPYLBENZENE)

Single Doses to Male Albino Rats by Mouth

Fed by Stomach Tube as a Dispersion in 1% "Tg" 7, 1 ml. = 0.20 grams

Rat No.	Date Dosed	Grams Wt.	Weight Change in 14 Days	Dosage; Grams per Kilo	Dose in Grams	Dose in ml. of Dispersion	Days to Death
86462	1-27-49	90	-	3.98	0.358	1.8	1
86463	"	94		3.98	0.374	1.9	1
86464	"	109	-	3.98	0.434	2.2	1
86450	"	96	-	3.98	0.382	1.9	1
86451	"	95	-	3.98	0.378	1.9	1
85938	1-31-49	94	-	3.98	0.374	1.9	1
85943	"	104	-	3.98	0.414	2.1	2
85940	"	114	-	3.98	0.454	2.3	1
85937	"	100	-	3.98	0.398	2.0	1
85942	"	98	+ 54	3.98	0.390	2.0	-
85918	1-31-49	108	-	3.16	0.341	1.7	1
85920	"	90	-	3.16	0.284	1.4	1
85934	"	108	-	3.16	0.341	1.7	1
85935	"	112	-	3.16	0.354	1.8	1
85933	"	96	-	3.16	0.303	1.5	1
85961	"	118	-	3.16	0.373	1.9	1
85919	"	108	+ 52	3.16	0.341	1.7	-
85922	"	92	+ 52	3.16	0.291	1.5	-
85930	"	116	+ 10	3.16	0.367	1.8	-
85931	"	90	+ 58	3.16	0.284	1.4	-
85964	1-31-49	112	-	2.52	0.282	1.4	2
85962	"	120	-	2.52	0.302	1.5	1
85951	"	94	-	2.52	0.237	1.2	4
85960	"	112	+ 44	2.52	0.282	1.4	-
85957	"	92	+ 42	2.52	0.232	1.2	-
85955	"	96	+ 62	2.52	0.242	1.2	-
85956	"	100	+ 62	2.52	0.252	1.3	-
85923	"	106	+ 16	2.52	0.267	1.3	-
85925	"	94	+ 8	2.52	0.237	1.2	-
85924	"	116	+ 9	2.52	0.292	1.5	-
85949	1-31-49	100	-	2.00	0.200	1.0	9
86452	1-27-49	97	+ 49	2.00	0.194	0.97	-
86454	"	92	+ 38	2.00	0.184	0.92	-
86455	"	101	+ 13	2.00	0.202	1.00	-
86453	"	97	+ 47	2.00	0.194	0.97	-
86275	"	110	+ 2	2.00	0.220	1.10	-
85926	1-31-49	114	+ 12	2.00	0.228	1.10	-
85928	"	90	+ 22	2.00	0.180	0.90	-
85948	"	106	+ 22	2.00	0.212	1.10	-
85916	"	102	+ 50	2.00	0.204	1.0	-

Table 12-76

CUMENE

Single Doses to Male Albino Rabbits cy Skin Absorption

Administered undiluted under "Vinylite" dam for 24 hours

Rabbit No.	Date Clipped	Date Applied	Wt.	Weight Change in 14 Days	Dosage; Ml. per Kilo	Dose in ml.	Days to Death
[illegible]	4-7-49	4-7-49	2300	-	20.0	46.0	2
[illegible]	"	"	2634	-	20.0	52.7	4
[illegible]	"	"	2680	-	20.0	53.6	11
[illegible]	"	"	2664	- 704	20.0	53.3	-
[illegible]	"	"	2710	- 506	20.0	54.2	-
[illegible]	2-23-49	2-23-49	2410	-	10.0	24.1	7
[illegible]	4-7-49	4-7-49	2362	-	10.0	23.6	13
[illegible]	2-23-49	2-23-49	2430	- 592	10.0	24.3	-
[illegible]	4-18-49	4-18-49	2220	- 290	10.0	22.2	-
[illegible]	2-18-49	2-18-49	2610	- 290	5.0	13.0	-
[illegible]	"	"	2610	- 170	5.0	13.0	-
[illegible]	"	"	2372	+ 108	5.0	11.9	-
[illegible]	"	"	2364	- 64	5.0	11.8	-
[illegible]	"	"	2308	- 128	5.0	11.5	-

100% mortality was assumed at a dosage level of 39.8 ml./kg. for calculation of the R. F. LD_{50} by the method of Thompson.

OFFICE OF TOXIC SUBSTANCES REV. 7/27/82

CODING FORM FOR GLOBAL INDEXING

Microfiche No. (7) •	OTS 0206745	1	No. of Pages		2		
Doc I.D.	8782149 81	3	Old Doc I.D.	8DS	4		
Case No.(s)	OTS 84003A II				5		
Date Produced (6)	—	6	Date Rec'd (6)	022285	7	Conf. Code •	N 8

Check One: ☐ Publication ☐ Internally Generated ☑ Externally Generated

Pub/Journal Name	9 —
	9 —
Author(s)	10 —
Organ. Name	11 UNION CARBIDE CORP
Dept/Div	12 —
P.O. Box — 13 / Street No./Name	14 39 OLD RIDGEBURY RD
City DANBURY 15 / State CT 16 / Zip 06817 17 / Country —	18
MID No. (7) — 19 / D & B NO. (11) —	20
Contractor —	21
Doc Type	22 • R.I • U.P • H.E.A.S.D 8.D. , S.U H.S F.N
Doc Title	23 ENVIRONMENTAL DATA

Chemical Name (300 per name) 25	CAS No. (10) 24
CUMENE	98-82-8

1A

3/6/85 (5

878214981

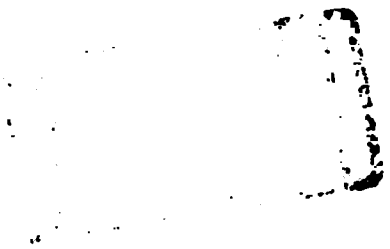
CUMENE (CAS NO. 98-82-8)
ENVIRONMENTAL DATA

FROM REPORT 1

Water Solubility - 0.01%
Theoretical Oxygen Demand
Carbonaceous (mg/mg)
calculated - 3.50
measured - 1.13

Bio-oxidation , percent
Unacclimated

Day 5 - 40
Day 10 - 62
Day 15 - 63
Day 20 - 70



FROM REPORT 2

Static LC_{50}, mg/l - 110
To Brine Shrimp

REPORT REFEERENCES

Report 1 - Waggy, G. T. , Payne, J. R., "Environmental Impact Analysis, Product Biodegradability Testing," Progress Report, August 12, 1974, File No. 19751, Research and Development Department. Union Carbide Corporation.
Note: Information is from Table I of this report. The text of the report was iincluded in the Union Carbide submission in response to 9/2/82 Federal Register Final Rule (47FR38780).

Report 2 - Waggy, G. T., Payne, J. R., "Environmental Impact Product Analysis, Acute Toxicity Testing," Progress Report, January 25, 1974, File No. 19133, Research and Development Department, Union Carbide Corporation.

Note: Information from Table VII of this report. The report text was included in the Union Carbide submission responding to the 9/2/82 Federal Register Final rule (47FR38789).

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